UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,487	09/27/2001	Steve Rochon	86177-15	8843

28291   7590   12/29/2006
FETHERSTONHAUGH - SMART & BIGGAR
1000 DE LA GAUCHETIERE WEST
SUITE 3300
MONTREAL, QC H3B 4W5
CANADA

EXAMINER
GREY, CHRISTOPHER P

ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *15 September 2006*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-51, 53-55, 57 and 58* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-4, 25-37, 40-51, 53-55, 57 and 58* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.   Claims 1-3, 25-27, 30, 36, 37, 40-51 and 57 and are rejected under 35 U.S.C.

103(a) as being unpatentable over Lyon (CA 2292828) in view of Brewer et al. (US

7002980), hereinafter referred to as Brewer.

<u>Claim 1, 37,, 44</u>   Lyon discloses a method for traffic flow control, where information

is obtained pertaining to the congestion level (bandwidth utilization level) of an output

port (page 3 lines 14-page 4 line 2), where each output port is associated with an output

buffer (egress queue) as seen in fig 1 elements 16 a-n and elements 1-N.

Lyon discloses a traffic flow controller (element 100 in fig 1) coupled to the input

and output ports, where the traffic controller receives discard information from the

output port, and formulates a traffic control message which is sent to the input port

(page 2 lines 8-31 and see fig 1 and 2).

Lyon also discloses sending priority information to the controller (Col 2 lines 26-

31).

Lyon does not specifically disclose determining from the bandwidth utilization

information and the amount of bandwidth consumed by packets received at each egress

queue, a discard probability associated with each egress queue.

Brewer discloses a manager (fig 1, 12) determining a discard probability (Col 8

eq 3.3) using an average byte count by determining the time-weighted average (Col 8

lines 50-52, where the average byte count is equivalent to the bandwidth of the

determined queue, as the average byte count has a unit of data per unit time).

Brewer also discloses using other constants (Col 8 line 54, further bandwidth

utilization info) to calculate the discard probability.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to modify the accumulator for determining a count of the cells in a queue as

disclosed by Lyon, by implementing the WRED algorithm employed by the manager as

disclosed by Brewer. The motivation for this modification is to control the drop

probability of packets entering the queuing structure (abstract, line 3-4).

Claim 2   Lyon discloses a cell tap (traffic management entity) for monitoring and

transmitting bandwidth priorities (bandwidth utilization information) about an output port

(page 3 lines 7-13 and see element 26 in fig 3), where each output port is associated

with an output buffer as can be seen in fig 1.

Claim 3   Lyon discloses each packet being made up of a plurality of traffic bytes or

a plurality of non-traffic bytes (priorities of cells-see page 8 lines 24-33)

Lyon does not disclose obtaining bandwidth utilization information regarding

packets received at the egress queues further includes determining for each particular

one of the output ports, an average number of traffic bytes received per time unit for

each egress queue connected to the particular output port.

Brewer discloses a manager **(fig 1, 12)** determining a discard probability **(Col 8 eq 3.3)** using an average byte count by determining the time-weighted average **(Col 8 lines 50-52, where the average byte count is equivalent to the bandwidth of the determined queue, as the average byte count has a unit of data per unit time)**. Brewer also discloses using other constants **(Col 8 line 54, further bandwidth utilization info)** to calculate the discard probability.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the accumulator for determining a count of the cells in a queue as disclosed by Lyon, by implementing the WRED algorithm employed by the manager as disclosed by Brewer. The motivation for this modification is to control the drop probability of packets entering the queuing structure **(abstract, line 3-4).**

Claim 25   Lyon discloses a plurality of output ports (elements 1-N in fig 1). Lyon also discloses each of the plurality of output ports being connected to a respective one of the output buffers (see fig 1 elements 1-N and see fig 3).

Claim 26   Lyon discloses an output port connected to an output buffer, where the output buffer contains a number of output queues (element 30 in fig 3).

Claim 27   The rejection of claim 1 discloses providing discard probability information. Lyon discloses a controller with a processor with a program memory (elements 152 and 154 in fig 9), where a controller is implemented using software programs and variables stored in the memory (page 16 lines 13-21). It would have been obvious to one of the ordinary skill in the art at the time of the invention that any program could be implemented to provide the discard probability.

Claim 30   Lyon discloses a controller discarding or not discarding a packet

associated with a particular output port depending on whether or not a threshold is

exceeded (page 3 line 14- page 4 line 2).

Lyon does not specifically disclose determining an egress queue for which a

packet is destined and transmitting or not transmitting based on the discard probability.

Brewer discloses determining an egress queue for which a packet is destined

(Col 7 line 42, queued in the appropriate QOS level queue).

Brewer discloses transmitting or not transmitting based on the discard probability

(Col 7 lines 40-42).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to modify the accumulator for determining a count of the cells in a queue as

disclosed by Lyon, by implementing the WRED algorithm employed by the manager as

disclosed by Brewer. The motivation for this modification is to control the drop

probability of packets entering the queuing structure **(abstract, line 3-4).**

Claim 36   Lyon discloses the controller being implemented using a software program

(page 16 lines13-21).

Claim 40   Lyon discloses a method for traffic flow control, where information is

obtained on a switch fabric pertaining to the congestion level (bandwidth utilization

level) of an output port (page 3 lines 14-page 4 line 2), where each output port is

associated with an output buffer (egress queue) as seen in fig 1 elements 16 a-n and

elements 1-N.

Lyon discloses a controller for determining discarding information (page 38 lines 9-17 and page 4 lines 3-13).

Lyon discloses a cell forwarder for receiving data destined for the output, and identifying the destination output port and queue (page 9 line 25- page 10 line 6).

Lyon discloses determining discarding information dependent on the results of the comparison, and if the threshold is exceeded for a particular queue, sending a flow control message for discarding (page 38 lines 9-17 and page 4 lines 3-13).

Lyon discloses determining discarding information dependant on the results of the comparison, and if the threshold is not exceeded, forwarding the packets accordingly (page 38 lines 9-17 and page 4 lines 3-13).

Lyon does not specifically disclose a drop probability evaluation module connected to the egress queues, said drop probability evaluation entity being adapted to determine a discard probability associated with each of the egress queues on the basis of the bandwidth utilization information.

Brewer discloses a manager **(fig 1, 12)** determining a discard probability **(Col 8 eq 3.3)** using an average byte count by determining the time-weighted average **(Col 8 lines 50-52, where the average byte count is equivalent to the bandwidth of the determined queue, as the average byte count has a unit of data per unit time)**. Brewer also discloses using other constants **(Col 8 line 54, further bandwidth utilization info)** to calculate the discard probability.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the accumulator for determining a count of the cells in a queue as

disclosed by Lyon, by implementing the WRED algorithm employed by the manager as

disclosed by Brewer. The motivation for this modification is to control the drop

probability of packets entering the queuing structure **(abstract, line 3-4).**

Claim 41   Lyon discloses each output port is associated with an output buffer

(egress queue) as seen in fig 1 elements 16 a-n and elements 1-N.

Lyon discloses a traffic flow controller which receives output port messages

(page 7 line 35-page 8 line23), where it would have been obvious to one of the ordinary

skill in the art at the time of the invention that the controller is connected to a plurality of

output ports, where a plurality of ports may be divided into groups and connected to the

controller via a line card within the controller, which transmits and receives data.

Lyon does not specifically disclose a portion of the drop probability evaluation

module is provided one each of the output line cards.

Brewer discloses a manager **(fig 1, 12)** determining a discard probability **(Col 8**

eq 3.3) using an average byte count by determining the time-weighted average **(Col 8**

lines 50-52, where the average byte count is equivalent to the bandwidth of the

determined queue, as the average byte count has a unit of data per unit time).

Brewer also discloses using other constants **(Col 8 line 54, further bandwidth**

utilization info) to calculate the discard probability.

It would have been obvious to one of the ordinary skill in the art at the time

of the invention to modify the accumulator for determining a count of the cells in a

queue as disclosed by Lyon, by implementing the WRED algorithm employed by the

manager as disclosed by Brewer. The motivation for this modification is to control the

drop probability of packets entering the queuing structure **(abstract, line 3-4).**

<u>Claim 42</u>   Lyon discloses a traffic flow controller connected to a plurality of input

ports (fig 1), where it would have been obvious to one of the ordinary skill in the art at

the time of the invention to implement a line card to enhance the connection.

Lyon discloses the forwarder being connected to the traffic flow controller for

receiving input port messages (page 9 line 25- page 10 line 6).

<u>Claim 43</u>   Lyon discloses a switch fabric (page 2 lines 5-25).

<u>Claim 45</u>   Lyon discloses a cell forwarder for receiving data destined for the output,

and identifying the destination output port and queue (page 9 line 25- page 10 line 6).

Lyon discloses the controller receiving and determining priorities (page 7 line 35-

page 8 line 22).

Lyon discloses determining discarding information dependent on the results of

the comparison, and if the threshold is exceeded for a particular queue, sending a flow

control message for discarding (page 38 lines 9-17 and page 4 lines 3-13).

Lyon discloses determining discarding information dependant on the results of

the comparison, and if the threshold is not exceeded, forwarding the packets

accordingly (page 38 lines 9-17 and page 4 lines 3-13).

<u>Claim 46</u>   Lyon discloses a method for traffic flow control, where information is

obtained pertaining to the congestion level of an output port (page 3 lines 14-page 4 line

2).

Lyon discloses a traffic flow controller (element 100 in fig 1) coupled to the input

and output ports, where the traffic controller receives discard information from the

output port, and formulates a traffic control message which is sent to the input port

(page 2 lines 8-31 and see fig 1 and 2).

Lyon does not specifically disclose wherein obtaining said congestion information

includes determining the amount of bandwidth consumed by packets arriving at the

egress entity.

Brewer discloses a manager **(fig 1, 12)** determining a discard probability **(Col 8**

eq 3.3) using an average byte count by determining the time-weighted average **(Col 8**

lines 50-52, where the average byte count is equivalent to the bandwidth of the

determined queue, as the average byte count has a unit of data per unit time).

Brewer uses discard info to determine flow control **(Col 7 lines 40-42)**.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to modify the accumulator for determining a count of the cells in a queue as

disclosed by Lyon, by implementing the WRED algorithm employed by the manager as

disclosed by Brewer. The motivation for this modification is to control the drop

probability of packets entering the queuing structure **(abstract, line 3-4).**

Claim 47   Lyon discloses determining discarding information dependent on the

results of the comparison, and if the threshold is exceeded for a particular queue,

sending a flow control message for discarding (page 38 lines 9-17 and page 4 lines 3-

13).

Furthermore, the rejection of claim 46 discloses the details of congestion information.

Claim 48   Lyon discloses wherein not transmitting the received packet to the ingress entity includes discarding the received packet (page 10 lines 4-6).

Claim 49   Lyon discloses wherein not transmitting the received packet to the ingress entity includes storing the packet in a memory location (fig 4, discarders 1-n, where some form of temporary storage is necessary as a decision is made before discard or transmission (page 10 lines 14-16, while the decoder decodes and determines disclosed information data must be stored temporarily as it awaits a decision)

Claim 50   Lyon discloses a discarder within the forwarder for sending packets on an alternate route for discard in the event that a flow control message indicates that packets are in condition for discard (page 10 lines 7-25).

Claim 51   Lyon discloses if a packet is in condition for discarding setting a specific bit to 1 (page 20 line 26- page 21 line 31).

Claim 57   Lyon discloses an output port connected to an output buffer, where the output buffer contains a number of output queues (element 30 in fig 3).

Lyon discloses an accumulator for maintaining a count of the level of congestion in an output port (page 3 line 14-page 4 line 2).

2.	Claims 4, 28, 29, 31-35, 54 and 55 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Lyon (CA 2292828) in view of Brewer et al. (US 7002980), in further

view of Blumer (US 2002/0105908)

<u>Claim 4</u>	Lyon discloses information being obtained pertaining to the congestion

level (allocated bandwidth) of an output port (page 3 lines 14-page 4 line 2), where each

output port is associated with an output buffer (egress queue) as seen in fig 1 elements

16 a-n and elements 1-N.

Lyon discloses comparing the count (allocated traffic bandwidth) of each output

queue to a bandwidth threshold (average received traffic bytes) for an output queue

(page 38 lines 9-17 and page 3 lines 14-page 4 line 2).

Lyon discloses determining discarding information dependent on the results of

the comparison, and if the threshold is exceeded for a particular queue, sending a flow

control message for discarding (page 38 lines 9-17 and page 4 lines 3-13).

Lyon discloses determining discarding information dependant on the results of

the comparison, and if the threshold is not exceeded, forwarding the packets

accordingly

The combination of Lyon and Brewer do not specifically disclose increasing or

decreasing the discard probability. However, Blumer discloses determining a drop

probability dependant on comparing an average buffer fill to a threshold (paragraph

0032).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to combine the comparison of a count of the level of congestion in a particular

queue to a threshold as disclosed by Lyon, with determining a drop probability based on a comparison procedure as disclosed by Blumer. The motivation for this combination is to ensure buffer management through evaluating a buffer occupancy, and performing discarding of packets in the event of congestion. Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention that when the threshold is exceeded as disclosed by Lyon, that discarding increases the chances of discarding, and when the threshold is not exceeded, there is less of a chance of discarding.

Claim 28   Lyon discloses a traffic flow controller (element 100 in fig 1) receiving discard information from the output port (page 2 lines 8-31 and see fig 1 and 2). Lyon also discloses the controller only sending flow control messages for discarding packets at the input ports when discarding is necessary (page 3 lines 14-page 4 line 2).

The combination of Lyon and Brewer do not specifically disclose recording the discard probability associated with each egress queue at selected times, and detecting whether a change of at least a predetermined magnitude has occurred in the discard probability associated with the egress queue.

Blumer discloses an average buffer fill value being used to calculate the drop probability, where the average buffer fill value may be calculated on a periodic basis (paragraph 0033)

Blumer discloses comparing the calculated drop probability associated with a buffer to a number (predetermined magnitude) generated by a linear feedback shift register (paragraph 0028).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to modify the controller and buffers as disclosed by Lyon, to receive and

transmit respectively, drop probability information when a comparison to a random

number has proven to be exceeded within the buffer as disclosed by Blumer. The

motivation for this modification is to limit the amount of information being sent to the

controller, thus limiting unnecessary congestion.

Claim 29   Lyon discloses a traffic flow controller (element 100 in fig 1) receiving

discard information from the output port (page 2 lines 8-31 and see fig 1 and 2). Lyon

also discloses the controller only sending flow control messages for discarding packets

at the input ports when discarding is necessary (page 3 lines 14-page 4 line 2).

Lyon and Blumer do not specifically disclose recording the discard probability

associated with each egress queue at selected times, and detecting whether a change

of at least a predetermined magnitude has occurred in the discard probability

associated with the egress queue. Lyon also does not disclose providing discard

probability after a predetermined amount of time.

Blumer discloses an average buffer fill value being used to calculate the drop

probability, where the average buffer fill value may be calculated on a periodic basis

(paragraph 0033)

Blumer discloses comparing the calculated drop probability associated with a

buffer to a number (predetermined magnitude) generated by a linear feedback shift

register (paragraph 0028).

Blumer discloses a decision being made every 2 cycles (paragraph 0052), where a decision is based on whether the discard probability is greater than the number generated.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the controller and buffers as disclosed by Lyon, to receive and transmit respectively, drop probability information when a comparison to a random number has proven to be exceeded within the buffer as disclosed by Blumer. It would have also been obvious to one of the ordinary skill in the art at the time of the invention that the time taken for a decision to be made as disclosed by Blumer could be a predetermined time, where 2 cycles could be the minimum amount of time before further processing. The motivation for this modification is to limit the amount of information being sent to the controller, thus limiting unnecessary congestion.

Claim 31, 32, 54, 55   The combination of Lyon and Brewer do not disclose generating a random number for the received packet; comparing the random number to the discard probability associated with the egress queue for which the received packet is destined, and transmitting or not transmitting based on the comparison.

Blumer discloses generating a random number, comparing a drop probability to the random number and discarding (claim 32) the packet if the drop probability is greater than the random number (paragraph 0026).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the output buffers as disclosed by Lyon, to include the apparatus for

calculating comparing and discarding as disclosed by Blumer. The motivation for this

modification is to achieve buffer management and avoid congestion.

Claim 33   Lyon discloses if a packet is in condition for discarding setting a specific

bit to 1 (page 20 line 26- page 21 line 9).

Claim 34   Lyon discloses storing/queuing cells within an output buffer/queue (page4

lines 3-13).

Lyon discloses if a packet is in condition for discarding setting a specific bit to 1

(page 20 line 26- page 21 line 9).

Lyon discloses a discarder for discarding and otherwise, forwarding cells (page 2

lines 32-page 3 line 5).

Claim 35   Lyon discloses an accumulator for determining a level of congestion in an

output port, where each output port is coupled to an output buffer (page 3 line 14- page

4 line 2).

Lyon discloses an updating procedure, where a count of the congestion level of

an output port is updated. Lyon also discloses if a threshold is not exceeded, not

discarding the packets.

Lyon discloses setting a bit to 0 if a packet is not to be discarded (page 20 line

26- page 21 line 9).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention that the packet previously marked a discardable, could remain in an output

queue for some time, and therefore be treated as a regular packet in the updating

procedure seeing that the conditions above are met.

3.   Claims 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon

(CA 2292828) in view of Brewer et al. (US 7002980) in view of Haskin et al. (US

6813242)

Claim 50   Lyon does not specifically disclose not transmitting the received packet

packet to the ingress entity includes rerouting the packet along the alternate route.

Haskin discloses rerouting the packet along the alternate route from ingress to an

egress in the event of congestion (Col 2 lines 28-50).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to combine the method of rerouting a packet from an ingress to an egress as

disclosed by Haskin in the event of congestion as indicated by a flow control message

as disclosed by Lyon. The motivation for this combination is to avoid congestion.

4.   Claims 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon

(CA 2292828) in view of Brewer et al. (US 7002980) in view of Jefferies et al. (US

6728253)

Claim 58   Lyon discloses an output port connected to an output buffer, where the

output buffer contains a number of output queues (element 30 in fig 3).

The combination of Lyon and Brewer do not specifically disclose the congestion

information including variability in the occupancy of each of the egress queues.

Jefferies discloses determining a variable occupancy value of each a plurality of

queues (Col 2 lines 25-44), and furthermore using this information to allocate data

bandwidth from a source.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention to implement the scheduler as disclosed by Jefferies, within the controller as

disclosed by Lyon. The motivation for this modification is to allow the flow control

messages as disclosed by Lyon to adjust a bandwidth given that the queue occupancy

has been evaluated, and it has been determined that a certain level of congestion has

bee reached.

Allowable Subject Matter

5.   Claims 5-24, 38 and 39 are allowed.

Response to Arguments

6.   Applicant's arguments with respect to claims 1, 37, 40, 44 and 46 have been

considered but are moot in view of the new ground(s) of rejection.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Christopher P. Grey whose telephone number is

(571)272-3160. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chau Nguyen can be reached on (571)272-3126. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art Unit 2616

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600